

Two New Varieties and One Change of Status in *Hosta* (Asparagaceae)

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Two new varieties, *Hosta kikutii* F. Maek. var. *densinervia* N. Fujita & M. N. Tamura and *H. kikutii* var. *scabrinervia* N. Fujita & M. N. Tamura are described. *Hosta kikutii* var. *densinervia* differs from *H. kikutii* var. *kikutii* in having the nerves of the leaves more or less close together and papillose abaxially. *Hosta kikutii* var. *scabrinervia* differs from *H. kikutii* var. *densinervia* in having the nerves on the abaxial surface of the leaves prominently papillose. Plants belonging to these two varieties were formerly assigned to *H. kikutii* var. *polyneuron* (F. Maek.) N. Fujita (= *H. polyneuron* F. Maek.), which is now regarded as a doubtful taxon. A change in status, *H. tsushimensis* N. Fujita var. *tibae* (F. Maek. ex H. Hara) N. Fujita & M. N. Tamura, is also proposed. A key to the varieties of *H. kikutii* and a key to the varieties of *H. tsushimensis* are provided.

Key words: Asparagaceae, *Hosta kikutii* var. *caput-avis*, *Hosta kikutii* var. *densinervia*, *Hosta kikutii* var. *polyneuron*, *Hosta kikutii* var. *scabrinervia*, *Hosta tsushimensis* var. *tibae*, Japan, Liliaceae

Maekawa (1952) described *Hosta polyneuron* F. Maek. based on plant(s) collected by Suzuki from Yaku Isl. He considered *H. polyneuron* to be related to *H. kikutii* F. Maek., *H. caput-avis* F. Maek., *H. tosana* F. Maek. and *H. densa* F. Maek. because they share bracts that are tightly closed and beak-like before flowering, although this property of the bracts is least conspicuous in *H. densa*.

Fujita (1976) also stressed this feature of the bracts and reduced *Hosta caput-avis*, *H. tosana* and *H. polyneuron* to *H. kikutii*. However, he reduced *H. densa* to *H. kiyosumiensis* F. Maek., whose bracts are not tightly closed but loosely imbricate before flowering. Fujita observed that scapes of both *H. caput-avis* and *H. tosana* are more or less curved at the base, and he did not distinguish *H. tosana* from *H. caput-avis* at any rank. Accordingly, he recognized three varieties in *H.*

kikutii; var. *kikutii*, var. *caput-avis* (F. Maek.) F. Maek. and var. *polyneuron* (F. Maek.) N. Fujita.

Although Maekawa (1952) reported *Hosta polyneuron* to be restricted to Yaku Isl., Fujita (1976) reported *H. kikutii* var. *polyneuron* to occur only on Shikoku and Honshu (S Kinki), although the type locality of *H. polyneuron* is Yaku Isl.

After a thorough investigation of *Hosta* on Yaku Isl. we have concluded that only *H. sieboldiana* (Lodd.) Engl. occurs there and that other taxa of *Hosta*, including *H. kikutii* var. *polyneuron*, do not. Evidence that *H. kikutii* usually does not occur sympatrically with *H. sieboldiana* supports this conclusion.

We have been unable to find the type specimen of *Hosta polyneuron* in any of the herbaria or nurseries that we checked. We have therefore been unable to determine if the description of *H. polyneu-*

ron in Maekawa (1952) is accurate and whether the type locality of *H. polyneuron* is truly on Yaku Isl. Because of this we regard *H. polyneuron* (= *H. kikutii* var. *polyneuron*) to be a doubtful taxon. We therefore propose *Hosta kikutii* var. *densinervia* N. Fujita & M. N. Tamura and *H. kikutii* var. *scabrinervia* N. Fujita & M. N. Tamura as new names for plants that were formerly assigned to *H. kikutii* var. *polyneuron* sensu Fujita (1976). *Hosta kikutii* var. *scabrinervia* differs from *H. kikutii* var. *densinervia* in having prominently papillose nerves on the abaxial surface of the leaves.

Accordingly, we recognize four varieties in *Hosta kikutii*; var. *kikutii*, var. *caput-avis*, var. *densinervia* and var. *scabrinervia*. These four varieties are more or less allopatrically distributed. Variety *kikutii* is in SE Kyushu, var. *caput-avis* is in SE Shikoku and SE Kinki (Honshu), var. *densinervia* is in SW Shikoku, E Shikoku (mostly downstream along the Yoshino River) and SE Kinki, and var. *scabrinervia* in C Shikoku.

Fujita (1976) considered *Hosta tsushimensis* N. Fujita to differ from *H. tibae* F. Maek. ex H. Hara in the following aspects. In *H. tsushimensis*, the upper dilated portion of the perianth is infundibular, the flower buds are greenish, and flowering period ranges from August to early September. In *H. tibae*, the upper dilated portion of the perianth is campanulate, the flower buds are red-purplish or white, and the flowering period is in late September. Fujita also believed the distribution areas of the two species to differ: *H. tsushimensis* occurred on

Tsushima, while *H. tibae* occurred around Nagasaki City.

Since Fujita's (1976) report, we have found populations of *Hosta tibae* at mid elevations on Inasa-dake in Nagasaki City. The flowering period of these populations is in early September, and therefore intermediate between the flowering times of *H. tsushimensis* and *H. tibae*. Further, the Inasa-dake populations include several individuals where the perianth shape and color of the flower buds are intermediate between those of *H. tsushimensis* and *H. tibae* of Fujita (1976). The upper dilated portion of the perianth is campanulate-infundibular and the flower buds are slightly greenish. Accordingly, the clear morphological and phenological gaps between *H. tsushimensis* and *H. tibae* disappeared. We therefore consider the differences between *H. tsushimensis* and *H. tibae* to be infraspecific rather than specific and provide a new combination to reflect this change in status.

Hosta tsushimensis* N. Fujita var. *tibae* (F. Maek. ex H. Hara) N. Fujita & M. N. Tamura, *stat. nov.

Basionym: *Hosta tibae* F. Maek. ex [Toyama, Fl. Nagasaki: 5 (1940), nom. nud.] H. Hara in J. Jap. Bot. 59: 154 (1984), '*tibai*'. — Type: JAPAN, Kyushu, Nagasaki Pref., circa Nagasaki, cult. in Univ. Tokyo, Sep. 1943 (fl), *H. Hara s.n.* (holotype).

Japanese name. Nagasaki-giboushi (F. Maek. ex Toyama 1940).

Key to the varieties of *Hosta tsushimensis*

- 1a. Upper dilated portion of perianth infundibular; flower buds greenish; flowering August to early September var. *tsushimensis*
- 1b. Upper dilated portion of perianth campanulate to campanulate-infundibular; flower buds red-purplish, white or slightly greenish; flowering September var. *tibae*



FIG. 1. Holotype of *Hosta kikutii* F. Maek. var. *densinervia* N. Fujita & M. N. Tamura (*S. Takafuji* 253, KYO).

Hosta kikutii F. Maek. var. **densinervia** N. Fujita & M. N. Tamura, **var. nov.** (Fig. 1)

Hosta kikutii F. Maek. var. *polyneuron* (F. Maek.) N. Fujita in Acta Phytotax. Geobot. 27: 80 (1976), p. maj. p. quoad pl. ex S Kinki et Shikoku.

Affinis *Hostae kikutii* var. *kikutii*, sed nervis foliorum densioribus, subtus plus minusve papillosis diversa.

Typus. JAPAN, Shikoku: Tokushima Pref., Miyoshi-gun, Ikeda-cho, Shikino-kami Ferry, 27 Sep. 1965 (fl), S. Takafuji 253 (holo- KYO; iso- KYO).

Herbs, perennial. *Rhizome* vertical, short, thick. *Foliage leaves* basal, erect-patent, tufted; petiole 5–37 cm long; blade lanceolate to ovate, 7–23 cm long, 2.5–11 cm broad, entire, basally obtuse to rounded, apically acuminate to attenuate-acuminate, nerves 13–21, close together, moderately papillose on abaxial surface. *Scape* terminal, 22–64 cm long, straight, obliquely ascending; bract-like cauline leaves few, lanceolate to ovate, 1.5–4.6 cm long. *Inflorescence* a terminal raceme; bracts lanceolate to ovate, to 3.1 cm long. *Flowers* 4.1–5.5 cm long; pedicel 0.8–2.5 cm long. *Capsules* cylindrical, 2.5–3.5 cm long, 3.8–4.5 mm in diam. *Anthesis* middle July to late September.

Japanese name. Awa-giboushi (nov.).

Distribution. Japan: Honshu (Mie and Wakayama) and Shikoku (Kagawa, Tokushima and Kochi).

Additional specimens examined. JAPAN. **Honshu.** Mie Pref.: Ise-shi, Mt. Asamagatake, 500 m alt., in serpentine area, 1 Oct. 1971 (fr), N. Fujita 213 (KYO). — Wakayama Pref.: Higashimuro-gun, Kozagawa-cho, Utsugi, 10 m alt., on rock cliff, cult. in Kyoto Univ., 25 Aug. 1975 (fl), N. Fujita 592 (KYO), 27 Aug. 1979 (fl), N. Fujita 749 (KYO). **Shikoku.** Kagawa Pref.: Kagawa-gun, Shioe-cho, Mt. Ohtaki, 24 Sep. 1961 (fl), S. Sakaguchi s.n. (KYO), 13 Sep. 1971 (fr), S. Sakaguchi s.n. (KYO). — Tokushima Pref.: Myozai-gun, Kamiyama-cho, Amagoi, 31 Aug. 1974 (fl), S. Takafuji 891 (KYO); Miyoshi-gun, Ikeda-cho, Shikino-kami Ferry, 16 Jul. 1965 (fl), S. Takafuji 215 (KYO); Ikeda-cho, along Yoshino River, 16 Sep. 1971 (fl), C. Abe 43049 (KYO). — Kochi Pref.: Kami-gun, Monobe-mura, Mt. Kanjyou-

yama, cult. in Kyoto Univ., 18 Jul. 1975 (fl), N. Fujita 587 (KYO); Agawa-gun, Agawa-mura, Nanokawa, along Niyodo River, 2 Sep. 1958 (fl), T. Yamanaka 26199 (KYO); Takaoka-gun, Sakawa-cho, Ohtagawa, 23 Sep. 1937 (fl), T. Yoshinaga s.n. (KYO); Ochi-cho, Mt. Yokogura, 7 Sep. 1949 (fl), S. Kitamura s.n. (KYO), 500 m alt., 22 Sep. 1957 (fl), G. Murata 11003 (KYO); Ochi-cho, Tokoroyama, in rock crevice of the riverside of Niyodo River, 13 Sep. 1962 (fl), G. Murata 17103, 17106, 17107 (KYO); Niyodo-mura, Mori, in rock crevice in riverbed, 7 Oct. 1971 (fr), N. Fujita 318 (KYO); Hata-gun, Nakamura-cho, along Shimanto River, 20 Aug. 1913 (fl), Z. Tashiro s.n. (KYO).

Hosta kikutii F. Maek. var. **scabrinervia** N. Fujita & M. N. Tamura, **var. nov.** (Fig. 2)

Hosta kikutii F. Maek. var. *polyneuron* (F. Maek.) N. Fujita in Acta Phytotax. Geobot. 27: 80 (1976), p. min. p. quoad pl. ex Shikoku.

Affinis *Hostae kikutii* var. *densinerviae*, sed nervis foliorum subtus notabiliter papillosis diversa.

Typus. JAPAN, Shikoku: Tokushima Pref., Miyoshi-gun, Ohboke, along the river, 13 Jul. 1968 (fl), C. Abe 33197 (holo- KYO).

Herbs, perennial. *Rhizome* vertical, short, thick. *Foliage leaves* basal, erect-patent, tufted; petiole 8.5–35 cm long; blade lanceolate to ovate, 10–24 cm long, 2.5–12.5 cm broad, entire, basally obtuse to cordate, apically acuminate to attenuate-acuminate, nerves 11–21, close together, prominently papillose on abaxial surface. *Scape* terminal, 22–62.5 cm long, straight, obliquely ascending; bract-like cauline leaves few, lanceolate to ovate, 2.4–3.8 cm long. *Inflorescence* a terminal raceme; bracts lanceolate to ovate, to 2.8 cm long. *Flowers* 3.4–5.2 cm long; pedicel 1.2–2 cm long. *Capsules* cylindrical, 1.5–2.5 cm long, 3–6 mm in diam. *Anthesis* middle July to early September.

Japanese name. Zaratsuki-giboushi (nov.).

Distribution. Japan: Shikoku (Tokushima, Ehime and Kochi).

Additional specimens examined. JAPAN. **Shikoku.** Tokushima Pref.: Miyoshi-gun, Ohboke-kudariguchi,



FIG. 2. Holotype of *Hosta kikutii* F. Maek. var. *scabrinervia* N. Fujita & M. N. Tamura (C. Abe 33197, KYO).

along the river, 22 Jul. 1967 (fr), *C. Abe 33151* (KYO); Minawa-mura, Kawasaki, along Iya River, 8 Sep. 1958 (fl), *T. Yamanaka 26270* (KYO). — Ehime Pref.: Uma-gun, Doi-cho, N foot of Mt. Higashi-akaishi-san, cult. in Kyoto Univ., 22 Aug. 1975 (fl), *N. Fujita 588* (KYO); Nii-gun, Ohfuki-mura, Kawaguchidani, Shimodani, 500 m alt., 30 Aug. 1955 (fl), *G. Murata 9232, 9234* (KYO); Kamiukena-gun, Omogo-mura, between Omogo and Mt. Ishizuchi, 800 m alt., 27 Aug. 1955 (fr), *G. Murata 9350* (KYO); Omogo-mura, Omogo-kei, 18 Jul. 1977 (fl), *Furuse 12344* (KYO), in shaded place on rock along the stream, 13 Aug. 1970 (fl), *N. Fujita 269* (KYO). — Kochi

Pref.: Nagaoka-gun, Ohtoyo-mura, between Ohtaguchi and Shiofurinotaki, 300 m alt., 23 Aug. 1964 (fl), *G. Murata 18737, 18740* (KYO); Ohtoyo-mura, Isodani, along Yoshino River, 8 Sep. 1958 (fr), *T. Yamanaka 26222* (KYO); Motoyama-cho, in front of Kizenyama Park, on rock of the bank of Yoshino River, 8 Aug. 1971 (fl & fr), *Hir. Takahashi & N. Fujita 214* (KYO); Agawa-gun, Ikegawa-cho, Kashiya, 6 Jul. 1971 (fl), *T. Yamanaka 60589* (KYO); Takaoka-gun, Hayama-mura, Kainokawa, in limestone area, cult. in Kyoto Univ., 22 Aug. 1975 (fl), *N. Fujita 589* (KYO).

Key to the varieties of *Hosta kikutii*

- 1a. Nerves of leaves not close together, maximum distance between the nerves 5.7 mm (when leaves small) to 14.0 mm (when leaves large), smooth abaxially 2
- 1b. Nerves of leaves more or less close together, maximum distance between the nerves 3.6 mm (when leaves small) to 8.9 mm (when leaves large), papillose abaxially 3
- 2a. Scape straight; flowering August to September var. *kikutii*
- 2b. Scape more or less curved at base; flowering July (to September) var. *caput-avis*
- 3a. Nerves of leaves slightly papillose abaxially var. *densinervia*
- 3b. Nerves of leaves prominently papillose abaxially var. *scabrinervia*

Doubtful taxon

Hosta polyneuron F. Maek.

in Nakai, Iconogr. Pl. Asiae Orient. 5: 496 (1952).
— *H. kikutii* F. Maek. var. *polyneuron* (F. Maek.)
N. Fujita in Acta Phytotax. Geobot. 27: 80 (1976),
quoad typ. — Type: JAPAN, Kagoshima Pref., Yaku
Isl., *Suzuki s.n.* (n.v.).

Japanese name. Sudare-giboushi (F. Maek.
1952).

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References

- Fujita, N. 1976. The genus *Hosta* (Liliaceae) in Japan.
Acta Phytotax. Geobot. 27: 66–96 (in Japanese with
English summary).
Mackawa, F. 1952. *Hosta caput-avis*. In: Nakai, T. (ed.),
Iconographia Plantarum Asiae Orientalis 5 (2): 495–
497. Shunyodo, Tokyo.

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